

DESCRIPTION OF MAP UNITS
SURFICIAL DEPOSITS

- Qf** **Fluvial deposits (Holocene)**—Unconsolidated or poorly consolidated river deposits consisting of moderately sorted, sub-angular to well-rounded boulders, gravel, sand, and silt; locally may include older river deposits on poorly defined lower terraces
- Qcl** **Colluvium (Holocene and Pleistocene)**—Unconsolidated or poorly consolidated slope deposits consisting of moderately sorted, sub-angular to angular boulders, gravel, sand, and silt; locally may include older river deposits on poorly defined lower terraces
- Qls** **Landslide deposits (Holocene and Pleistocene)**—Chaotic, angular fragments of weathered and fresh bedrock and colluvium, as clast-supported or mud matrix supported diamict derived from upslope. Includes areas of hummocky topography inferred to be underlain by landslide deposits
- Qft** **Fluvial terrace deposits (Pleistocene)**—Moderately sorted, well-rounded to sub-rounded, semi-consolidated stratified gravel, sand, and silt on elevated terraces along major drainages
- Qoft** **Older Fluvial terrace deposits (Pleistocene)**—Moderately sorted, well rounded to sub-rounded, stratified gravel, sand, and silt on highest elevated terraces along major drainages, commonly more deeply weathered and consolidated than lower terrace deposits

ROCKS OF THE CASCADE VOLCANIC ARC

Volcanic, intrusive and sedimentary rocks

- Td** **Upper dacite (late Eocene)**—Pyroxene dacite flows, platy, flow foliated, light gray where fresh, weathers red-brown
- Tuff of Bond Creek (late Eocene)**—Divided into:
- Tbcu** **Upper unit (late Eocene)**—Moderately to poorly welded rhyolitic ash flow tuff consisting of white to pale gray vitric crystal tuff; contains broken and partially resorbed quartz, plagioclase and sanidine(?) with minor biotite, sphene, disseminated opaques and trace amounts of very fine grained euhedral amphibole, epidote and tourmaline that may be vapor phase crystallization. Includes rare xenoliths of mica schist; approximately 120 to 150 meters thick
- Tbcl** **Lower unit (late Eocene)**—Moderately to poorly welded rhyolitic ash flow tuff; white to pale grey weathering, quartz and plagioclase phyrlic, crystal rich, trace white mica and epidote, rare rounded and resorbed biotite, abundant opaques, mafic minerals strongly altered.; approximately 120 meters thick; interpreted to be lower cooling unit of Tuff of Bond Creek. K-Ar age of 34.9 Ma determined from outcrops in adjacent Medford 2' quadrangle (Smith, 1980)
- Tsf** **Rhyolite and dacite flows (late Eocene)**—Light gray to white, plagioclase and quartz phyrlic, flow banded to massive, locally hydrothermally altered rhyolite and dacite flows
- Tbf** **Basalt of Brown Mountain (late Eocene)**—Dark gray to black, brown weathering, aphyric, fine grained to aphanitic, columnar jointed to platy basalt flows making up Brown Mountain. Upper part of sequence consists of plagioclase-rich phyrlic basalt flows along ridge top
- Taf** **Andesite flows (late Eocene)**—Andesitic flows and amygdaloidal flow breccia, dominantly plagioclase and plagioclase-clinopyroxene porphyritic, with trace amounts of sphene and apatite, massive, locally columnar jointed; locally overlain by dacitic plagioclase phyrlic unit; approximately 120 to 180 meters thick

Tvs **Volcanolithic sandstone, conglomerate, and laharic breccia (late Eocene)**—Greenish gray, indurated volcanic sandstone, silt and conglomerate containing porphyritic andesite, basalt, and silicic clasts; interbedded with andesitic and dacitic laharic breccia locally consisting of chaotic blocks of sedimentary rock, and rare andesite flows and silicic tuff breccia

Tc **Coolestin Formation (late Eocene?)**—Sedimentary and volcanoclastic rocks, Fluvial and shallow marine sedimentary unit consisting of boulder, cobble and pebble conglomerate sandstone and tuffaceous sandstone, pale whitish, orange and ochre weathering, well-rounded to subangular clasts of Klamath lithologies, including schistose graywacke, pebble conglomerate of the Days Creek and Riddle Formations, porphyritic volcanic rocks, chert. Angular to subangular arkosic sandstone with little or no mica, and gritty-Plutonic derived sandstone that resembles disarticulated, deeply weathered diorite, poorly consolidated, matrix supported, conglomerate clasts commonly imbricated; marine fossils found at one locality in the Lane Mountain Quadrangle, massive red sandstone with well-developed groove casts observed at one locality; approximately 300 to 400 meters thick

Intrusive Rocks

Tib **Diabase and basalt intrusions (late and middle Eocene)**—Dominantly glomero-porphyritic augite + plagioclase porphyritic diabase and basalt sills and dikes that cut Mesozoic basement and basal Tertiary section; may be feeder dikes to basalt of Brown Mountain; some dikes cut tuff of Bond Creek; contact aureoles in Mesozoic rocks developed around largest intrusive bodies. Sills at 10,000 foot depth in the Mobil well east of Sutherlin give K-Ar ages of 33.9±3.4 and 36.8±3.6 Ma (Ryu and others, 1992)

Tis **Rhyolite and dacite intrusions (late and middle Eocene)**—Dominantly fine grained, aphyric, light gray to white dikes and sills within Remote Member (Twr) of White Tail Ridge Formation. May be feeders for flows in unit Tsf.

Tia **Andesite dikes and sills (late and middle Eocene)**—Platy to blocky jointed, aphyric to plagioclase phyrlic, finely crystalline andesite intruding andesite flows of unit Taf and volcanic sedimentary rocks of unit Tvs

ROCKS OF THE TYEE BASIN

Tes **Spencer Formation (late and middle Eocene)**—120 m of friable, fine- to very coarse-grained moderately sorted, thick- to very thick-bedded, micaceous, arkosic cross-bedded to laminated sandstone with a few coal beds and carbonaceous mudstone; fluvial-deltaic; some shallow-marine mollusks and carbonized leaves date the unit as late Eocene (Hoover, 1963; Sanborn, 1937)

Teb **Bateman Formation (late and middle Eocene)**—750 m of fine- to coarse-grained, moderately indurated, cross-bedded to ripple and parallel laminated to hummocky bedded, micaceous arkosic sandstone; minor overbank mudstone; some sub-bituminous coal and bioturbated sandstone with a few shells of Venericardia (Weatherby, 1991); composed of many thickening-upward parasequences; wave-dominated delta. Unit caps high ridges; in part age-equivalent to Spencer Formation

Tebm **Bateman Formation mudstone (late and middle Eocene)**—Thin to thick bedded, locally fossiliferous pro-delta-neritic mudstone; interfingers with Bateman sandstone unit in southern part of outcrop area

Tee **Elkton Formation mudstone (middle Eocene)**—450 m of laminated, medium to dark gray foram-bearing (bathyal) micaceous mudstone; upper slope to basinal; contains some nested channel sequences of medium- to thick-bedded, amalgamated, graded micaceous arkosic turbidite sandstone and thin mudstone beds; a few thickening-upward beds of shallow-marine, mollusk-bearing, laminated to hummocky bedded, micaceous arkosic sandstone in lower part. Formation is middle Eocene (upper Ulatisian-lower Narizian foraminiferal stage according to Bird, 1967; equivalent to A-1 stage of Almgren and others, 1988, and coccolith subzone CP12b. Interfingers with the Baughman Member (Ttbs) of the Tyee Formation


Tyee Formation (middle and early Eocene)—Divided into:

Ttbs **Baughman Member (middle Eocene)**—300 to 600 m of zeolite-cemented, iron-stained, coarse-grained, thick- to very thick-bedded, micaceous, lithic arkosic sandstone; cliff-former; some large-scale cross-bedded pebbly sandstone and polymict conglomerate lenses; represents fluvial to wave-dominated delta. Delta plain facies includes massive, green to carbonaceous-micaceous overbank mudstone and sub-bituminous coal beds; delta front facies contains oyster-bearing estuarine deposits, paralic coal, and thickening-upward delta front parasequences of hummocky bedded, bioturbated to ripple-laminated sandstone. In southern part of map, local unconformity at base with fluvial mudstone chip conglomerate incised into underlying deep-marine Hubbard Creek mudstone; conformable contact toward northern part of the map. Molluscan fossils indicate middle Eocene age (Ryu and others, 1992)

Ttbm **Baughman Member mudstone (middle and early Eocene)**—Massive, gray green to carbonaceous-micaceous overbank mudstone

Tth **Hubbard Creek Member (middle and early Eocene)**—120 to 300 m of micaceous laminated to massive deep-marine mudstone (lower to upper slope); minor fine-grained, micaceous arkosic, graded, thin- to thick-bedded turbidite sandstone and thin mudstone in nested channel sequence (Tths) with slump structures and mudstone chip conglomerates. Uppermost part of unit is bioturbated shelfal-upper slope mudstone (Ryu and others, 1992). Benthic foraminifers are referable to middle Eocene (A-1 to G-1 stages of Almgren and others, 1988, according to Ryu and others, 1992). Unit conformably overlies and interfingers with Tyee Mountain Member mudstone (Tttm) and locally disconformably overlies Camas Valley Formation in the southern part of the map area (Black, 1990, 1993)

Tths **Hubbard Creek Member sandstone (middle Eocene)**—Fine-grained, micaceous arkosic, graded, thin- to thick-bedded turbidite sandstone and thin mudstone in nested channel sequences

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SCALE 1:62,500

LEGEND OF GEOLOGIC DESCRIPTIONS